UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/663,604	09/15/2003	Bernd J.W. Mathiske	SUN-P9039	3540

22835 7590 11/10/2005

A. RICHARD PARK, REG. NO. 41241
PARK, VAUGHAN & FLEMING LLP
2820 FIFTH STREET
DAVIS, CA 95616

EXAMINER	
WALTER, CRAIG E	

ART UNIT	PAPER NUMBER
2188	

DATE MAILED: 11/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/663,604	MATHISKE ET AL.	
	Examiner	Art Unit	
	Craig E. Walter	2188	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 September 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings received on 15 September 2003 are deemed acceptable.

Claim Objections

2. Claims 2, 8, 11, 17, 20 and 26 are objected to because of the following informalities:

As for claims 2, 11 and 20, the phrase "the task of" in line 1 should be omitted for clarity.

As for claims 8, 17 and 26, the word "the" in line two of these claims should be omitted for clarity.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 3, 8, 12, 17, 21 and 26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As for claims 3, 12 and 21, the phrase "problematic references" in line five renders the claims indefinite as the specification fails to provide a standard for ascertaining what does, and what does not constitute a "problematic" reference.

Prior art cannot be applied against this claim until Applicant clarifies what constitutes a "problematic reference".

As for claims 8, 17 and 26, the phrase "periodically garbage collecting" in line one renders the claims indefinite as the specification fails to provide a standard for ascertaining how frequently the garbage collecting occurs. The claims will further be treated on their merits based on the assumption that "periodically" is taken to mean more than once.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-2, 4-11, 13-20 and 22-27 are rejected under 35 U.S.C. 102(b) as being anticipated by Slaughter et al., hereinafter Slaughter (WO 01/95106 A2).

As for claims 1, 10 and 19, Slaughter teaches a method (a medium as in claim 10, and an apparatus as in claim 22) for redirecting external memory allocation operations, generated during calls by an application to external library functions, to an internal memory manager within the application, comprising:

encountering a call to an external library function during execution of the application (page 8, lines 25-27 – Slaughter discloses a virtual heap (Fig. 1a, element 110) which contains at least a portion of the runtime environment of

application 104 – see also page 4, lines 1-5. Fig. 1e further illustrates how the application running within the virtual heap invokes a native method (element 158) which in turn invokes a call for native code (external library function) to access system resources page (17, lines 10-22)).

determining if the external library function can call to an internal memory allocation function within the application and if so, redirecting the call to the internal memory allocation function (referring to page 9, line 38 through page 10, line 6, the application can determine if the resources needed are currently in the in-memory heap 108, and if not, copy them into the in-memory heap from the virtual heap 110. In other words, portions of the runtime environment used to invoke the external library functions can be moved internally, within the client (i.e. JVM - element 101)). Also see page 4, lines 32-38 – the execution state can be cached from the virtual heap 110, to the in-memory heap 108.

It is worthy to note that Slaughter does in fact teach embodying his invention on a computer readable medium, as claimed by applicant (claims 10-18), on page 41, lines 1-5. Further, the mechanisms claimed in claim 10 used to execute, determine and redirect the functions (similar to the method steps of claim 1) of the claim, are taught by Slaughter, as they are inherently included within the client device (Fig. 1a, element 140), which is used to carry out his claimed invention.

As for claims 2, 11 and 20, Slaughter teaches a method (a medium as in claim 11, and an apparatus as in claim 29) according to claim 1 (claim 10 and claim 19) wherein the task of determining if the external library function can call

an internal memory allocation function involves reading a pre-determined indicator value, which indicates whether the external library function can call the internal memory allocation function (on page 31, line 35 through page 32, line 13, Slaughter discloses a cache table used to maintain entries for each cache line contained with the virtual heap. The "type" field is used to determine which lines in the heap can and cannot be flushed, and therefore must be "pinned" in the external memory. For example, as described on page 32, lines 10-13 read-only objects are not loaded twice, hence are pinned in the virtual heap, and cannot be allocated again (i.e. paged-out to the internal heap memory 108). Depending on the status of the field, the system can determine based on the pre-determined indicator, if these portions of the memory can call the internal memory allocation function and either be paged-out for use of the application internally, or pinned in, only to reside in the external heap 110).

As for claims 4, 13 and 22, Slaughter teaches a method (a medium as in claim 13, and an apparatus as in claim 22) according to claim 1 (claim 10 and claim 19) wherein the application is a platform-independent virtual machine (page 33, lines 25-28 – Slaughter discloses different platforms (i.e. Windows, or Linux)).

As for claims 5, 14 and 23, Slaughter teaches a method (a medium as in claim 13, and an apparatus as in claim 22) according to claim 1 (claim 10 and claim 19) wherein the application runs in a single-threaded mode on a computing device (page 33, lines 25-28 – Slaughter discloses his system running on Windows 9x (i.e. Win 95), which is a single threaded OS).

As for claims 6, 15 and 24, Slaughter teaches a method (a medium as in claim 13, and an apparatus as in claim 22) according to claim 1 (claim 10 and claim 19) wherein the application runs on a memory constrained device (Fig. 9, the memory used by the application is limited to the memory as illustrated within element 140 (i.e. memory 108 and 115)).

As for claims 7, 16 and 24, Slaughter teaches a method (a medium as in claim 13, and an apparatus as in claim 22) according to claim 1 (claim 10 and claim 19) wherein redirecting the call to the internal memory allocation function involves executing an interpose function that calls the internal memory allocation function (page 10, lines 9-13 – the page-out operation is the function used to move data and code contained in the virtual heap, to the in-memory heap for the application to use and run-on internally. The page-out function is an interpose function which calls the internal memory allocation function).

As for claims 8, 17 and 26, Slaughter teaches a method (a medium as in claim 13, and an apparatus as in claim 22) according to claim 1 (claim 10 and claim 19), further comprising periodically garbage collecting the memory allocated by the internal memory allocation function (Fig. 9, element 126, the garbage collector collects memory as required – page 34, lines 4-6).

As for claims 9, 18 and 27, Slaughter teaches a method (a medium as in claim 13, and an apparatus as in claim 22) according to claim 1 (claim 10 and claim 19) wherein the internal memory allocation function allocates memory in a heap (Fig. 9, elements 108 and 110 are allocated as heaps).

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Traversat et al. (US Patent 6,760,815) teaches a caching mechanism for a virtual heap.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Craig E. Walter whose telephone number is (571) 272-8154. The examiner can normally be reached on 8:30a - 5:00p M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mano Padmanabhan can be reached on (571) 272-4210. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Craig E Walter
Examiner
Art Unit 2188

CEW

Reginald G. Bragdon
REGINALD G. BRAGDON
PRIMARY EXAMINER